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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) A medical image diagnosis support device, comprising:

an organ region setting means for setting [[the]] organ regions ~~from the~~ in medical images ~~of the subject being~~ obtained by a medical imaging device;

a deformation calculating means for calculating in one image a degree of deformation from normal shapes of the organ regions [[being]] set by the organ region setting means;

a reference value storing means for storing [[the]] a deformation degree of [[the]] an organ region as a reference value;

a lesion detecting means for detecting [[the]] existence of [[the]] lesion of the organ region from the result of comparing the reference value [[being]] stored by the reference value storing means with the degree of deformation ~~degree being~~ calculated by the deformation degree calculating means; and

an informing means for visually and/or auditorily informing the existence of the ~~lesions~~ lesion of the organ region [[being]] detected by the detecting means.

2. (currently amended) The medical image diagnosis support device according to claim 1, wherein the deformation degree calculation means comprises:

a bifurcation detecting means for detecting [[the]] bifurcation of the previously calculated organ region;

a means for creating [[the]] a plurality of [[the]] cross-sections of the organ region

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[[being]] diverged by the bifurcation [[being]] detected by the <u>bifurcation</u> detecting means;

and

a distance calculating means for calculating [[the]] <u>a</u> shortest distance of [[the]] <u>an</u>

opposed peripheral portion between each of the plurality of cross-sectional images ~~being~~

~~created~~, and

wherein the lesion detecting means detects the existence of [[a]] <u>the</u> lesion in the organ

region based on the shortest distance of the opposed peripheral portion between the plurality of

the cross-sectional images, [[being]] calculated by the distance calculating means.

3. (previously presented) The medical image diagnosis support device according to claim

1, wherein the reference value storing means stores a plurality of templates according to the

deformation degree of the organ region.

4. (currently amended) The medical image diagnosis support device according to claim 1,

wherein the deformation degree calculating means includes:

a cross-sectional image calculating means for calculating [[the]] cross-sectional images

that are orthogonal to axial direction of the organ region; and

an extracting means for extracting a lumen and [[the]] <u>an</u> exterior of the organ region

from the cross-sectional images [[being]] calculated [[from]] <u>by</u> the cross-sectional image

calculating means; and calculates [[the]] <u>a</u> degree of deformation of the lumen and the exterior

of the organ region [[being]] extracted by the extracting means.

5. (currently amended) The medical image diagnosis support device according to claim 1,

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wherein the deformation degree calculating means includes:

[[a]] an extracting means for extracting a hollow viscera ~~out of~~ from the organ region ~~being set by the organ-region setting means~~;

a notable region setting means for setting [[the]] a notable region of the hollow viscera [[being]] extracted by the extracting means; and

a means for creating cross-sectional images of the hollow viscera [[being]] extracted by the extracting means based on the notable region [[being]] set by the notable region setting means, and

wherein the lesion detecting means detects the existence of the lesion of the organ region based on the degree of deformation ~~degree~~ of the cross-sectional images of the hollow viscera ~~being created by the creating means~~.

6. (currently amended) The medical image diagnosis support device according to claim 1, wherein the informing means informs the existence of [[a]] the lesion visually by displaying [[it]] the lesion through colors or movement in displayed images.

7. (currently amended) The medical image diagnosis support device according to claim 6, wherein the visual presentation is executed by displaying the cross-sectional images of the organ regions ~~being set by the organ-region setting means~~, and by highlighting lesion candidate portions [[being]] detected by the lesion detecting means on the cross-sectional images.

8. (currently amended) The medical image diagnosis support device according to claim 1, wherein the informing means informs the existence of [[a]] the lesion auditorily by outputting it

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through voices and sounds, or a variance of the voices and sounds.

9. (currently amended) The medical image diagnosis support device according to claim 1

further ~~comprises~~ comprising:

a cross-section extracting means for extracting [[the]] cross sections from a feature

quantity of a hollow viscera on the ~~tomographic~~ medical images [[being]] obtained by the

medical imaging device;

a physical quantity calculating means for calculating [[the]] a physical quantity

including [[the]] radius, degree of circularity, and gravity point of the hollow viscera on the

hollow viscera cross-sections [[being]] extracted by the extracting means;

an ROI calculating means for calculating [[the]] a region of interest based on the

physical quantity [[being]] calculated by the physical quantity calculating means;

a 3-dimensional image creating means for creating [[the]] 3-dimensional images of the

hollow viscera from the ~~tomographic~~ medical images including the cross sections of the hollow

viscera [[being]] extracted by the cross section extracting means within the region of interest

[[being]] calculated by the ROI calculating means; and

an image displaying means for displaying the 3-dimensional images [[being]] created by

the 3-dimensional image creating means.

10. (currently amended) The medical image diagnosis support device according to claim

9 further ~~comprises~~ comprising a center-line calculating means for calculating [[the]] a

center line of the hollow viscera based on the gravity point of the hollow viscera cross sections

[[being]] calculated by the physical quantity calculating means, wherein the image display

means displays the center line [[being]] calculated by the center-line calculating means together

with the 3-dimensional images [[being]] created by the 3-dimensional image creating means.

11. (currently amended) The medical image diagnosis support method comprises:

an organ region setting step [[for]] of setting [[the]] organ region from the regions in

medical images of the subject being obtained by [[the]] a medical imaging device;

a deformation degree calculating step [[for]] of calculating in one image a degree of

deformation from normal shapes of the organ regions region being set [[by]] in the organ

region setting step;

a reference value storing step [[for]] of storing [[the]] a deformation degree of

[[the]] an organ region as a reference value;

a lesion detecting step [[for]] of comparing the reference value [[being]] stored

[[by]] in the reference value storing step with the degree of deformation degree being

calculated [[by]] in the deformation degree calculating step, and [[for]] detecting [[the]]

existence of [[a]] lesion of the organ region from the result of the comparison; and

an informing step [[for]] of visually and/or auditorily informing the existence of [[a]]

the lesion.

12. (currently amended) The medical image diagnosis support method according to claim

11, wherein the deformation degree calculating step includes further comprising:

a step for detecting the calculated bifurcation of the organ region;

a step for creating [[the]] a plurality of cross-section images of the diverged

bifurcated organ region by the bifurcation being detected by the previous step; and

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~~a distance calculating step for~~ calculating [[the]] a shortest distance of [[the]] an

opposed periphery portion to [[the]] a spacing between the plurality of cross-sectional images

~~being respectively created~~, and

wherein the lesion detecting step detects the existence of the lesion of the organ region

based on the shortest distance of the opposed periphery between the plurality of the cross-

sectional images ~~being calculated by the distance calculating step~~.

13. (currently amended) The medical image diagnosis support method according to claim

11, ~~wherein the reference value storing step stores~~ further comprising:

storing a plurality of templates according to the degree of deformation ~~degree~~ of the

organ regions.

14. (currently amended) The medical image diagnosis support method according to claim

11, ~~wherein the deformation-degree calculating step includes~~ further comprising:

a cross-sectional image calculating step for calculating [[the]] cross-sectional images

that are orthogonal to [[the]] an axial direction of the organ region; and

an extracting step for extracting a lumen and [[the]] an exterior of the organ region

from the cross-sectional images [[being]] calculated [[by]] in the cross-sectional image

calculating step, and calculates [[the]] calculating a deformation degree of the lumen and the

exterior of the organ region ~~being extracted by the extracting step~~.

15. (currently amended) The medical image diagnosis support method according to claim

11, wherein ~~the deformation-degree-calculating step includes~~ further comprising:

[[a]] an extracting step for extracting a hollow viscera out of the organ regions set [[by]] in the organ region setting step;

a notable region setting step for setting [[the]] a notable region of the hollow viscera [[being]] extracted [[by]] in the extracting step; and

a step for creating [[the]] cross-sectional images of the hollow viscera [[being]] extracted [[by]] in the extracting step based on the notable region [[being]] set [[by]] in the notable region setting step, and

wherein the lesion detecting step detects the existence of the lesion of the organ region based on the deformation degree of the cross-sectional images of the hollow viscera ~~being created by the creating step~~.

16. (currently amended) The medical image diagnosis support method according to claim 11, wherein the informing step informs the existence of [[a]] the lesion ~~being detected by the detecting step~~ visually through displaying [[it]] the lesion by color tinting and/or [[the]] movement on a displayed image.

17. (currently amended) The medical image diagnosis support method according to claim 16, wherein the ~~visual presentation is executed by~~ informing step includes displaying [[the]] cross-sectional images of the organ regions [[being]] set by the organ region setting step, and [[by]] highlighting a lesion candidate portion ~~being detected by the lesion detecting step~~ on the cross-sectional images.

18. (currently amended) The medical image diagnosis support method according to claim

11, wherein the informing step informs the existence of [[a]] the lesion ~~being detected by the detecting step~~ auditorily through outputting [[it]] by voices and/or sounds, or a variance of voices and/or sounds.

19. (currently amended) The medical image diagnosis support method according to claim 11 further ~~comprises~~ comprising:

a cross-sectional image extracting step for extracting [[the]] cross sections from a feature quantity of a hollow viscera in [[the]] cross-sectional images [[being]] obtained by the medical imaging device;

a physical quantity calculating step for calculating [[the]] a physical quantity including [[the]] radius, degree of circularity and gravity point of the hollow viscera on the cross-sectional images ~~image of the hollow viscera being extracted by the extracting step~~;

an ROI calculating step for calculating [[the]] a region of interest based on the physical quantity [[being]] calculated [[by]] in the physical quantity calculating step;

a 3-dimensional creating step for creating [[the]] 3-dimensional images of the hollow viscera from the cross-sectional images including the cross-section of the hollow viscera ~~being extracted by the cross sectional image extracting step~~ within the region of interest ~~being calculated by the ROI calculating step~~; and

an image displaying step for displaying the 3-dimensional images ~~being created by the 3-dimensional creating step~~.

20. (currently amended) The medical image diagnosis support method according to claim 19, further ~~comprises the~~ comprising:

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a center line calculating step for calculating [[the]] a center line of the hollow viscera based on the gravity point of the cross section of the hollow viscera [[being]] calculated [[by]] in the physical quantity calculating step,

wherein the image display step displays the center line [[being]] calculated [[by]] in the center line calculating step together with the 3-dimensional images [[being]] created [[by]] in the 3-dimensional image creating step.